Dynamic ARP Inspection

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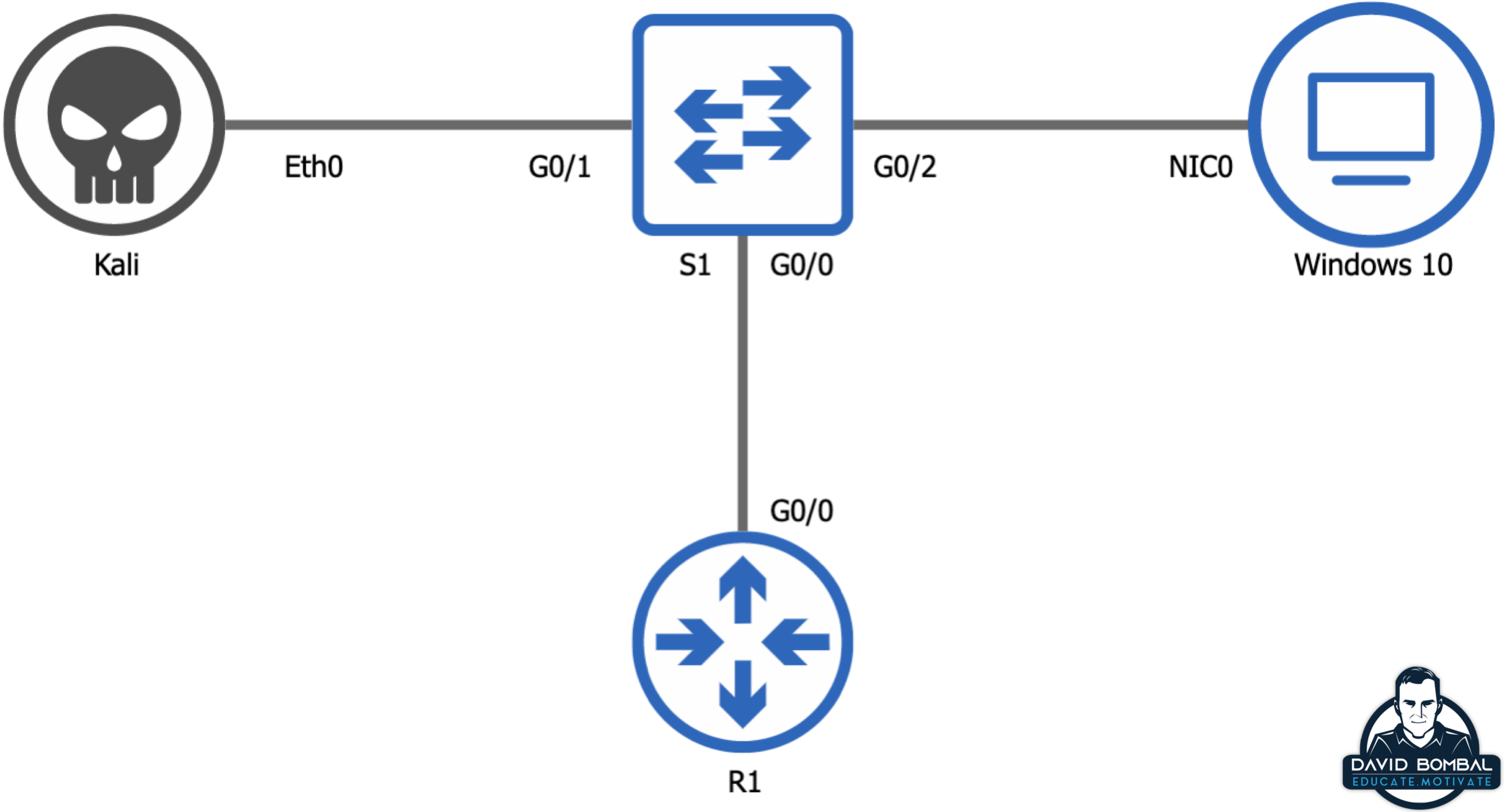
- Want to watch a YouTube video?
  - https://youtu.be/uKhySSs08tk


Kali
Eth0
G0/1
S1
G0/0
G0/2
NIC0
Windows 10
G0/0
R1

Dynamic ARP Inspection (DAI)

- DAI is a security feature that validates Address Resolution Protocol (ARP) packets in a network.
- DAI allows a network administrator to intercept, log, and discard ARP packets with invalid MAC address to IP address bindings.
- This capability protects the network from certain "man-in-the-middle" attacks.

Requirements

- Either enable DHCP Snooping
- Or, manually configure entries

DAI Configuration

- Configuration examples per network diagram
  - Substitute VLAN 1 with your VLAN
  - Substitute g0/0 and g0/1 with the interfaces you use

DHCP Snooping Part 1:

- Enable DHCP snooping:
  - `conf t`
  - `ip dhcp snooping`
  - `ip dhcp snooping vlan 1`
  - `no ip dhcp snooping information option`
  - `exit`
  - `show ip dhcp snooping`

DHCP Snooping Part 2:

- Specify trusted ports:
  - `conf t`
  - `int G0/0`
  - `ip dhcp snooping trust`

DHCP Snooping Part 3:

- Rate limit untrusted ports (packets per second):
  - `int G0/1`
  - `ip dhcp snooping limit rate 10`
  - `end`

Verification

- Verify that it is working:
  - `show ip dhcp snooping`
  - `debug ip dhcp snooping events`
  - `debug ip dhcp snooping packets`

Another Option:

- If you don't want to use DHCP Snooping, manually configure entries:

  ```
  conf t
  arp access-list win10pc
  permit ip host 10.1.1.1 mac host 1010.0001.0001
  exit
  ip arp inspection filter win10pc vlan 1
  int G0/2
  no ip arp inspection trust
  ```

Enable and verify DAI:

- Enable DAI:
  - `conf t`
  - `ip arp inspection vlan 1`
  - `ip arp inspection validate src-mac`
  - `int G0/0`
  - `ip arp inspection trust`
  - `end`
  - `show ip arp inspection`

DAI Rate limiting timers:

- Optional: Rate limiting recovery:
  - DAI rate limits by default (Whereas DHCP Snooping does not by default)
    - Default on untrusted ports is 15 packets per second (pps)
    - Trusted ports are not rate limited by default

DAI Rate limiting timers:

- Optional: Rate limiting recovery:
  - G0/0 uses a rate limit of 10 pps and burst of 1 second (default interval) = 10 pps
  - G0/1 uses a rate limit of 10 packets over a burst period of 5 seconds = 10 pps over 5 seconds
- `conf t`
- `int G0/0`
- `ip arp inspection limit rate 10`
- `int g0/1`
- `ip arp inspection limit rate 10 burst interval 5`
- `end`
- `show ip arp inspection interfaces`

Dyamic ARP Inspection

- Go here for more:
  - http://bit.ly/ciscodai
  - http://bit.ly/dynamicarp
  - http://www.davidbombal.com

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